

## **CLAIMS**

1. A point-to-multipoint network arrangement comprising:-

a head-end station;

at least one subscriber station;

5 a point-to-multipoint network providing shared medium connectivity between each subscriber station and the head-end station;

wherein each subscriber station is arranged to transmit data that has previously been segmented into packet-switched transport protocol packets, to the head-end station, using a time division multiple access protocol without the need to  
10 further segment the packet-switched protocol packets.

2. A point-to-multipoint network arrangement according to claim 1 in which the packet-switched transport protocol employs packets formatted according to an Ethernet protocol.

3. A point-to-multipoint network arrangement according to claim 1 in which the packet-switched transport protocol is arranged to carry Internet  
15 Protocol data.

4. A point-to-multipoint network arrangement according to claim 1 in which the packet-switched transport protocol is arranged to carry unsegmented Ethernet frames .

20 5. A point-to-multipoint network arrangement according to claim 1 in which the TDMA protocol employs frames each arranged to carry multiple packet-switched transport protocol packets.

6. A point-to-multipoint network arrangement according to claim 1 in which the at least one subscriber station is arranged to periodically receive  
25 synchronisation signals transmitted from the head end-station.

7. A point-to-multipoint network arrangement according to claim 6 in which differential time delays arising from differing path lengths between the head-end station and outstations are absorbed by including guard bands in the TDMA protocol.

8. A point-to-multipoint network arrangement according to claim 1 in which the point-to-multipoint network is an optical network.

9. A point-to-multipoint network according to claim 8 in which the optical network is a passive optical network.

5 10. A point-to-multipoint network arrangement according to claim 1 in which the point-to-multipoint network is one of a wireless network and a high-speed copper network.

10 11. A point-to-multipoint network arrangement according to claim 1 in which each subscriber station is allocated to one of a plurality of groups, each group transmitting on a distinct physical channel.

12. A telecommunications access network comprising a point-to-multipoint network arrangement according to claim 1.

15 13. A telecommunications access network comprising a passive optical network arrangement according to claim 1.

14. A telecommunications network comprising a passive optical network arrangement according to claim 1.

20 15. A head-end station for a point-to-multipoint network comprising at least one subscriber station, and a point-to-multipoint network providing shared medium connectivity between each subscriber station and the head-end station, the head-end station being arranged to receive from the at least one subscriber station data previously segmented into packet-switched transport protocol packets and transmitted using a time division multiple access protocol without the packet-switched protocol packets having been further segmented.

25 16. A telecommunications network comprising a head-end station according to claim 15.

30 17. A method of operating a point-to-multipoint network arrangement comprising a head-end station, at least one subscriber station, and a point-to-multipoint network providing optical connectivity between each subscriber station and the head-end station, comprising the steps of:

transmitting upstream using a packet-switched transport protocol over a TDMA protocol configured to obviate segmentation of packet-switched transport protocol packets.

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20. An upstream communications signal in a point-to-multipoint access network, the signal comprising a sequence of TDMA frames each separated by a guard band, each TDMA frame being arranged to carry at least one complete packet-switched transport protocol packet.